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IN THE CLAIMS:

1. (Currently amended) A fuel cell system comprising:

at least one fuel cell having a fuel chamber including a fuel electrode, an oxygen chamber including an oxygen electrode and an electrolyte layer interposed between the fuel electrode and the oxygen electrode;

a gas discharge line for discharging residual air from the fuel chamber;

a hydrogen concentration sensor for detecting hydrogen concentration in gas exiting the fuel chamber;

a discharge valve in the fuel gas discharge line; and

pressure regulating means for regulating a supply pressure of a flow of fuel gas supplied to the fuel chamber at a first pressure, higher than a second pressure used in normal power generation, during a start-up power generating state when the fuel cell starts up power generation with opening of the discharge valve, until the detected concentration of the fuel gas in the fuel chamber exceeds a predetermined gas concentration, and for reducing the supply pressure of the flow of fuel gas to the fuel chamber to the second pressure, lower than the first pressure, and ~~by~~ closing the discharge valve when the detected concentration of the fuel gas in the fuel chamber exceeds the predetermined gas concentration, to thereby establish a normal power generating state in which a flow of fuel gas into the fuel chamber is maintained at the second pressure for generating electric power.

PAGE 2/14 * RCVD AT 12/18/2007 12:18:49 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/3 * DNIS:2738300 * CSID:7036831080 * DURATION (mm-ss):03-28

2. (Currently amended) The fuel cell system according to claim 1, further comprising a fuel gas supply line through which the fuel gas flows at the time of startup of power generation, ~~sensor for detecting the concentration of the fuel gas in the fuel chamber~~ and wherein the pressure regulating means includes a pressure regulating valve in the fuel gas supply line and control means for controlling the pressure regulating valve responsive to the detected concentration of the fuel gas in the fuel chamber.

3. (Previously presented) The fuel cell system according to claim 1, further comprising a fuel gas supply line through which the fuel gas flows at the time of startup of power generation, wherein the pressure regulating means includes two regulating valves that are arranged in parallel and are respectively set to provide a flow of fuel gas at different supply pressures, a switching valve arranged on the line, and switching means for switching the open and close of the switching valve.

4. (Previously presented) The fuel cell system according to claim 1, wherein, in the normal power generation state of the fuel cell, the fuel cell is connected to an external load.

5. (Original) The fuel cell system according to claim 1, further comprising a start switch for turning on and off of the fuel cell system wherein the power generation start-up time of the fuel cell includes a predetermined period of time after the start switch is turned on.

6. (Previously presented) The fuel cell system according to claim 5, wherein the power generation start-up time of the fuel cell is when the start switch is turned on after a lapse of a predetermined period of time after the start switch has been turned off in the normal power generation state.

Claims 7 - 21. (Canceled)

22. (Previously presented) The fuel cell system according to claim 1 further comprising a pump between the fuel chamber and the discharge valve, wherein the pressure regulating means includes a pressure regulating valve for changing the supply pressure of the fuel gas between the start-up power generating state and the normal power generating state, and control means which opens the pressure regulating valve at the same time of startup of power generation and then drives the pump to establish a negative pressure inside the fuel chamber.

23. (Previously presented) The fuel cell system according to claim 1 wherein, during the start-up power generating state, residual air is discharged from the fuel chamber and out of the fuel cell system through the opened discharge valve and gas discharge line.

24. (Currently amended) A fuel cell system comprising:

at least one fuel cell having a fuel chamber including a fuel electrode, an oxygen chamber including an oxygen electrode and an electrolyte layer interposed between the

fuel electrode and the oxygen electrode;

a fuel gas tank for storing a fuel gas;

a fuel gas inflow line connected between the fuel gas tank and the fuel chamber for supplying the fuel gas to the fuel chamber;

a gas discharge line for discharging residual air from the fuel chamber, out of the fuel cell system, during a start-up power generating phase;

a hydrogen concentration sensor for detecting hydrogen concentration in gas exiting the fuel chamber;

a discharge valve in the gas discharge line for discharging residual gas; and

pressure regulating means provided in the fuel gas inflow line for regulating a supply pressure of a flow of fuel gas supplied to the fuel chamber at a first pressure, higher than a second pressure used in normal power generation, during the start-up power generating phase when the fuel cell starts up power generation with opening of the discharge valve, until the detected concentration of the fuel gas in the fuel chamber exceeds a predetermined gas concentration, and for reducing the supply pressure of the flow of fuel gas to the fuel chamber to the second pressure, lower than the first pressure, and ~~by~~ closing the discharge valve when the detected concentration of the fuel gas in the fuel chamber exceeds the predetermined gas concentration, to thereby establish a normal power generating state in which a flow of fuel gas into the fuel chamber is maintained at the second pressure for generating electric power.

25. (Currently amended) The ~~the~~ fuel cell system according to claim 1, further comprising:

a gas outflow line connected at one end to the fuel chamber, the gas discharge line being connected to the gas outflow line;

a gas inflow line connected at one end to the fuel chamber and at its opposite end to the gas outflow line;

a pump located in the gas outflow line between the fuel chamber and the gas discharge line; and

the gas outflow line and the gas inflow line forming a gas circulating loop through the fuel chamber and the pump.

26. (Currently amended) A method of operating a fuel cell system including at least one fuel cell having a fuel chamber including a fuel electrode and an oxygen chamber including an oxygen electrode, the method comprising:

detecting hydrogen concentration of gas exiting the fuel chamber;

regulating a supply pressure of a flow of fuel gas supplied to the fuel chamber at a first pressure, higher than a second pressure used in normal power generation, during a start-up power generating phase when the fuel cell starts up power generation with opening of a discharge valve to purge residual oxygen from the fuel chamber, until the detected concentration of the fuel gas in the fuel chamber exceeds a predetermined gas concentration, and

reducing the supply pressure of the flow of fuel gas to the fuel chamber to the second pressure, lower than the first pressure, and ~~by~~ closing the discharge valve when the detected concentration of the fuel gas in the fuel chamber exceeds the predetermined gas concentration, to thereby establish a normal power generating state

in which a flow of fuel gas into the fuel chamber is maintained at the second pressure for generating electric power.

27. (Previously presented) The method of claim 26 wherein the power generation starts a predetermined period of time after a start switch is turned on.

28. (Previously presented) The method of claim 27 wherein the power generation start-up phase ends when the fuel system is connected to an external load.

29. (New) The method of claim 27 further comprising:

detecting oxygen concentration in gas exiting the fuel chamber; and

reducing the supply pressure of the flow of fuel gas to the second pressure and closing the discharge valve only when the detected oxygen concentration equal to or less than a predetermined oxygen concentration.

30. (New) The fuel cell system according to claim 1, further comprising:

an oxygen concentration sensor for detecting oxygen concentration in gas exiting the fuel chamber; and

wherein the pressure regulating means reduces the supply pressure of the flow of fuel gas to the second pressure and closes the discharge valve only when the detected oxygen concentration equal to or less than a predetermined oxygen concentration.

31. (New) The fuel cell system according to claim 24, further comprising:

an oxygen concentration sensor for detecting oxygen concentration in gas exiting the fuel chamber; and

wherein the pressure regulating means reduces the supply pressure of the flow of fuel gas to the second pressure and closes the discharge valve only when the detected oxygen concentration equal to or less than a predetermined oxygen concentration.